

## Melting Of Polar Ice Caps

What are ice caps:

- Melting ice caps are a covering of ice over a large area on a polar region of the planet that are melting

Why are the ice caps melting?

- Climate Change -> Global Warming
- Global warming is occurring because more carbon is being emitted into the atmosphere which is causing the Earth's greenhouse gas layer to get thicker
- this thicker layer is trapping more heat into the planet
- carbon emissions are up by 46% since the industrial revolution
- carbon gets emitted into the atmosphere at this dangerous rate by burning fossil fuels

The effects on the earth:

- rising sea levels
- pollutes the water
- takes away the habitat for arctic animals like polar bears
- Many scientists are led to believe that the melting of the ice caps are due to natural causes, other scientists believe it is because of human activities they have decided that the changes in climate are created by burning coal, oil and gas

- Land Ice

- world's two major ice sheets = Greenland and Antarctica

- together, Greenland and Antarctica contain about 75% of the world's fresh water

- if all the ice from these two ice sheets were to melt and be returned to the ocean the sea levels would rise by over 75 m

- The temperature in Greenland is much warmer than the temperature in the Antarctic so it is to melt with global warming -

temperatures are far enough below freezing that they can handle a bit of global warming and still not melt like Greenland

- In the areas in which the ice sheets extend towards the ocean, the ice has a tendency to move out over the surrounding water, which creates structures called ice shelves (Fig. 1.1)

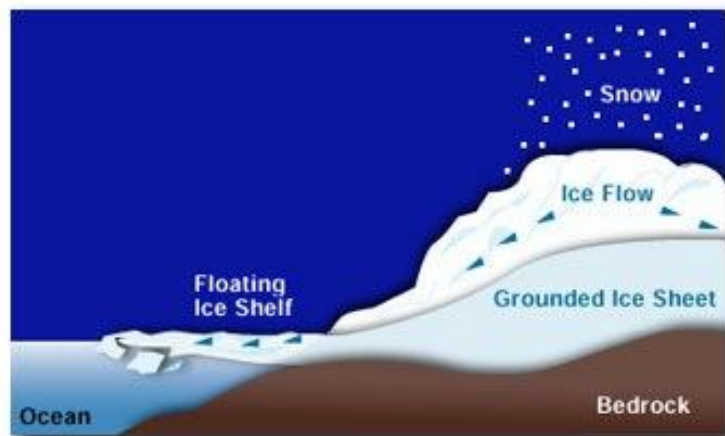


Figure 1.1

more likely  
Antarctica's

- These “ice shelves are dangerous because due to global warming, the water under the ice shelves is warmer which means that the shelves would break up more willingly, which would form extremely big ice bergs
  - This is bad because say the ice shelves of West Antarctica were to break up, more inland ice would be released into the ocean which would lead to a large rise in sea levels by several meters - this process would be irreversible
  - Global warming is also expected to enlarge the amount of precipitation in the polar regions (in addition to the melting) meaning which ever of these effects dominates would determine whether the polar ice sheets grow or shrink
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- Sea Ice
    - The melting of sea ice does not effect sea levels because it is already floating on the sea and has formed an equilibrium with it
    - Sea ice responds in correlation with changes in the atmosphere and oceans and could be a clue to more general climate change like global warming
    - However, sea ice significantly changes from each season to the last season and from each year to the last year so how much of the changes are just from natural causes is currently unknown to an extent

How to stop it:

- Simply reduce the fossil fuel emissions into the atmosphere
  - Stop burning fossil fuels
  - Use eco-friendly resources like solar energy, wind energy or dam energy
  - Handling greenhouse gases more responsibly
  - Not burning large areas of rain forest. - The initial burn of these fuels releases a significant amount of carbon dioxide into the atmosphere and due to the extra emissions there is less vegetation to remove the carbon dioxide from the atmosphere by the process of photosynthesis.

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